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Life Science Research Building, Emory University Atlanta, Georgia

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Clemson University

A LIFE SCIENCES RESEARCH BUILDING

Emory University
Atlanta, Georgia

LOUISE CHARLOTTE SHERIDAN

LIFE SCIENCE RESEARCH BUILDING, EMORY UNIVERSITY
ATLANTA, GEORGIA

This terminal project is presented to the faculty of the College of Architecture, Clemson University, as partial fulfillment of the requirements for the Degree of Bachelor of Architecture.

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INTRODUCTION

ABSTRACT

The purpose of the new Life Science Research Building at Emory University is to serve the needs of five departments of the Medical School, four departments of the Graduate School of Arts and Sciences, and two grant-funded chairs: the Woodruff Chair and the Neurosciences Chair.

Located near Lullwater Park, the ground level of the new Research Center will promote interaction with the beauty of life so abundant and so close, and also with fellow scientists, both faculty and students.

A pedestrian link from the central campus is a circulation generator, safely carrying students across two railroad tracks, directly into the second level of the Research Building.

There are two circular forms that are office towers which are appendages to the main body of the building containing the research laboratories and their support rooms. The separation of offices from laboratories permits three mechanical shafts located at the three elevator shafts. Each shaft serves only the specific needs of the space that it moves through perpendicularly and zoning of the mechanical ducts is possible. Office air remains unmixed with lab air, as the labs have fume hoods and more frequent air changes are required in the labs than elsewhere.

The vertical circulation is dependent upon the three elevator shafts and the three fire stairwells located at the office towers and near the building's center. There is also a vertical entrance into the second level by means of the light-well stairs ascending from the terrace below. The horizontal circulation flows on each floor around the light-well, whose main purpose is to allow light into adjacent interior laboratories.

The Research Building is designed to meet aesthetic needs that enhance the generation of science and the specific needs that each department requires to satisfy its program.

THE AIM OF SCIENCE

It is the aim of science to give us, in its theories, a literally true account of what the world is like. Genuine belief that a theory is true is what causes it to be accepted as a scientific theory, and explanation plays an important role in lending credibility to belief.[1]

If one says that an explanation is scientific, he is saying nothing about its form or the sort of information cited as a means of proof. However, the explanation to some extent must draw upon science to get the information. Always the criteria of evaluation--how good an explanation it is--follows the strictures of

scientific theory. Therefore, to say an explanation has been a success is to say that a description is scientific because it is adequate and informative.

For example, Newton's theory of gravitation did not contain an explanation of gravitational phenomena, but only a description. One asks if Newton really explained the tides by postulating the mysterious and yet unexplained force of gravity. Through normal human intuition we know that a scientific explanation does not remove one mystery by postulating another one. The principle exists that A does not explain B if A also requires explanation and has not received it.[2]

The point is that the true demand on science is not just to provide scientific explanation, but to postulate imaginative pictures which have a hope of suggesting new statements of observable occurrences and of correcting false ones. A good scientist must strive to save any observable phenomena, because valid theories are good explanations of what the world is like and necessarily include the phenomena.

THE REALITY OF THE SCIENTIST

Science is achieved through a series of steps that people do; it is an activity done with the objective of learning about the world surrounding us. The result of science is knowledge about the world. The word science comes from the Latin scio, meaning "I know," which in

turn stands for comprehension, perception, understanding, and an ability to give an explanation.

Every year about thirty billion dollars are spent worldwide on scientific research. There are about two million scientists who have spent many years strenuously training to devote their lives to doing what is called science.[3]

Because research in science is based on work previously done and because the scientists' ways of thinking and their present understanding are instrumental in progress to follow, their education in the sciences remains hierarchical. As a result of the hierarchical structures of scientific knowledge, it takes many years of strenuous education before a young scientist-to-be can be expected to be able to do independent research along a research frontier. A Master's Degree is generally not sufficient and one's education does not even stop with his Ph.D. Degree. While working on his Ph.D., he specializes even more narrowly than the particular scientific discipline in which he has gained his initial education; his thesis research pertains to one particular problem in one particular subspecialty in a scientific discipline.

A scientist derives esthetic satisfaction and pleasure from pursuing scientific research and from discovering laws of nature. He is not unlike the artist who does art for art's sake.

Scientists spend considerable time discussing problems with each other. In their home institutions they are getting critiques on some of their new suggestions, conjectures, or proposals. An institution is crucial in generating creative, productive research activity because a certain critical mass of scientists in one geographic location who have strongly overlapping research interests, protects the truth that causes a theory to be accepted as a scientific theory.

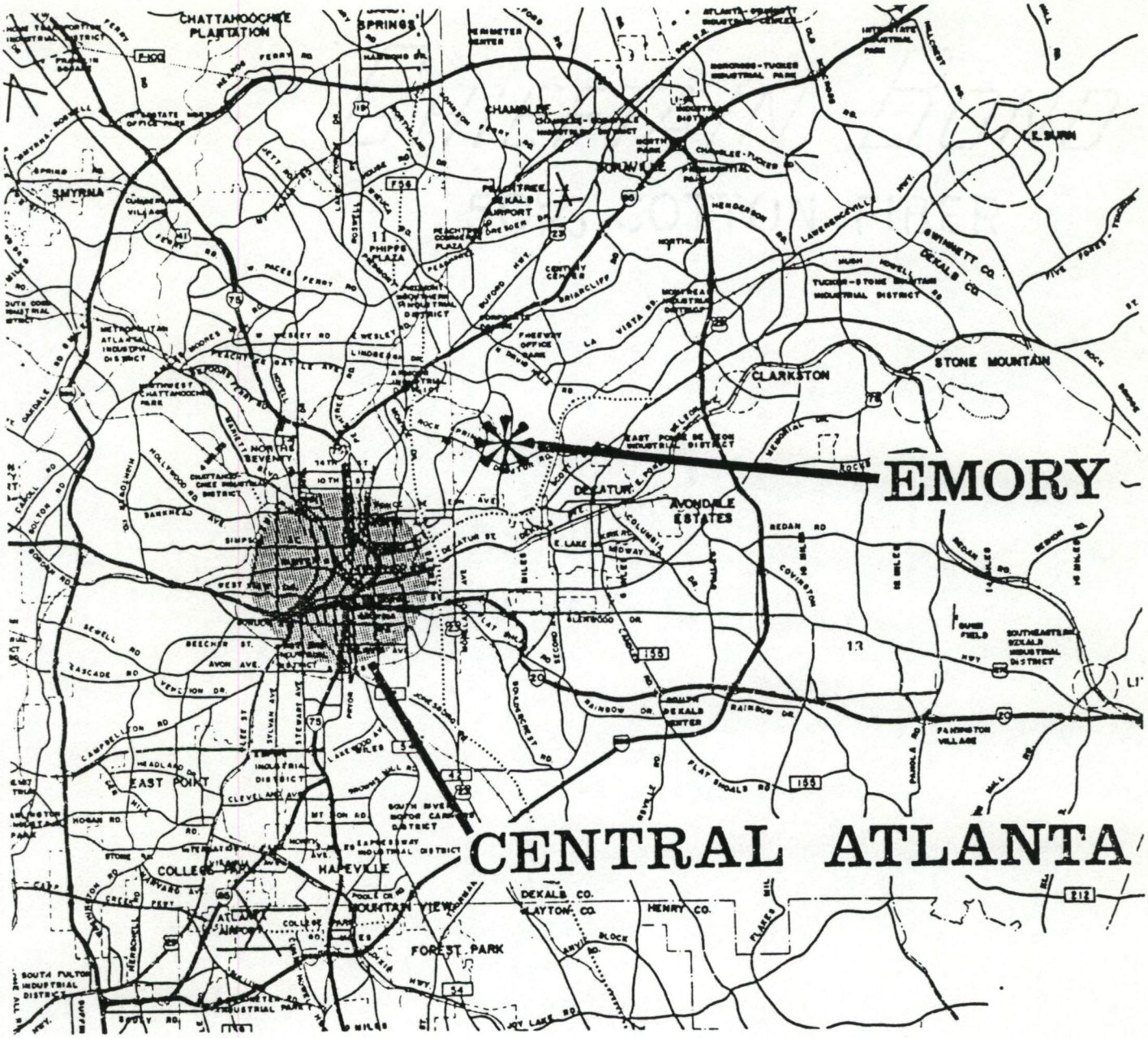
HISTORY

EMORY UNIVERSITY AND CAMPUS PLAN

The existing Emory Campus in Atlanta, Georgia, was authorized in 1915, but the school's official history actually began back in 1836, as Emory College at Oxford, Georgia.[4] Also in 1915, the Atlanta Medical College transferred its holdings to Emory to become its School of Medicine. In 1944 the Atlanta-Southern Dental College became the Emory University School of Dentistry; the same year, a School of Nursing was also established.

The first plan of campus development was that of a Pittsburgh architect, Henry Hornbostel. Mr. Hornbostel translated the irregular terrain, watercourses, and tree cover into a Northern Italianate architectural concept; it was a sense of Tuscany in Georgia--the effect of undulating hills, tall pines, and native marble as the building material.[5] The new Life Science Research Building--its relationship with the land and its materials and colors--should not discredit the original Hornbostel concept.

Emory University property covers 570 acres in Druid Hills, DeKalb County, located in the northeast sector of Atlanta, Georgia (see the Location Map). Druid Hills is a prosperous metropolitan area with some high density housing since World War II, but overall remaining an area of single family houses on landscaped lots. The landscape respects the original terrain and is a visual greenbelt for those leaving the highways to



LOCATION MAP

approach Emory. In all directions there are groves of very tall pines and continuous changes in slope.

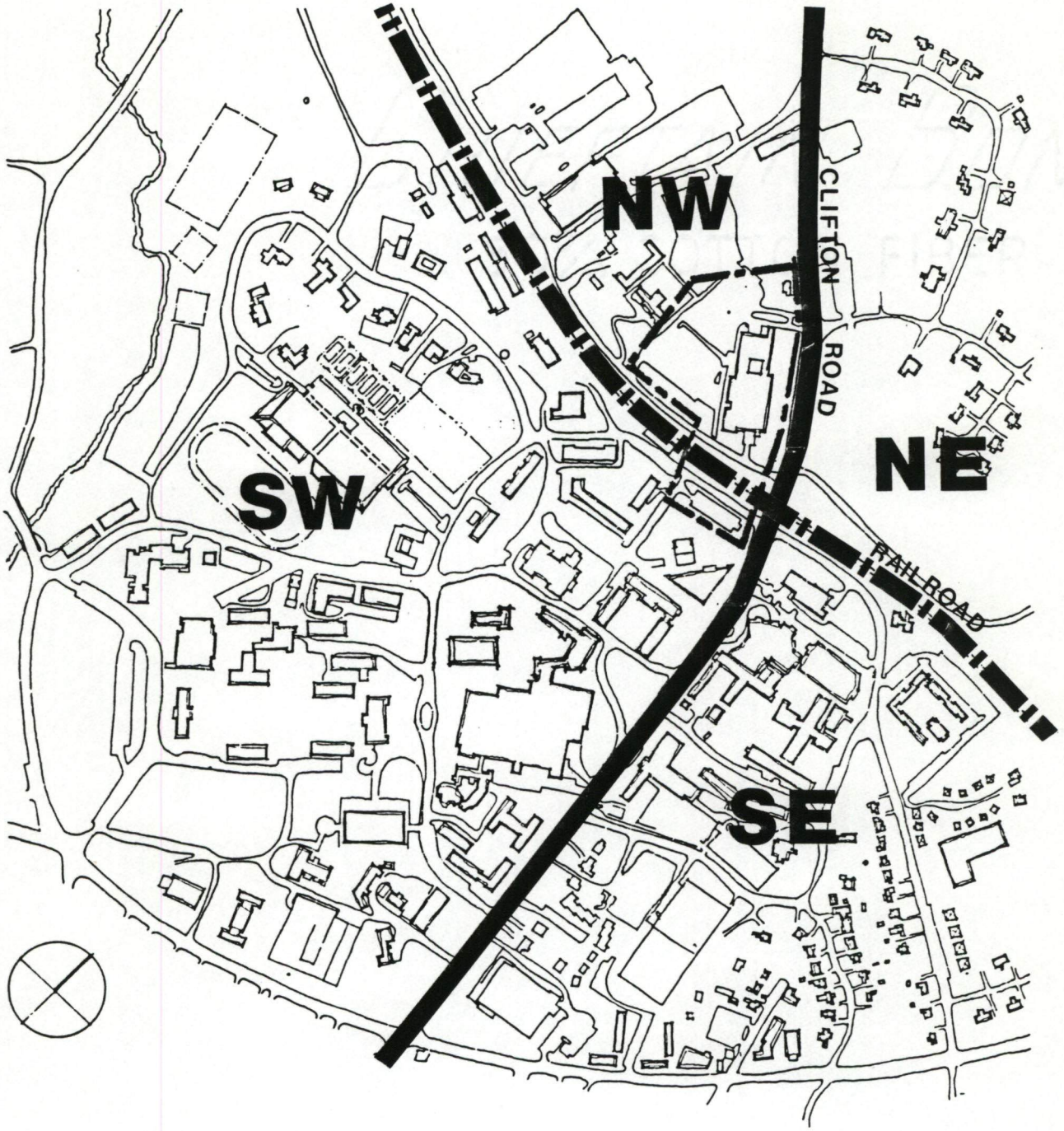
In close proximity to the University are several private and government institutions devoted to health care and the natural sciences.

The total University property holdings are bisected by Clifton Road and the Seaboard Coast Line Railroad. These two landmarks serve as quadrant boundaries (see the Quadrant Map). The central campus area, a small commercial zone called Emory Village, and a low density residential neighborhood are contained in the southwest quadrant. An undeveloped wooded area surrounding Lullwater Lake is the northeast quadrant; within are the home of the University President and Yerkes Regional Primate Center. The Law School and Emory Clinic are included in the southeast quadrant and the Dental School falls in the northwest quadrant.

Clifton Road and North Decatur Road are the only two major city arteries for the vehicular circulation of both community traffic and campus traffic. These two roads intersect just south of the central campus. The remainder of public ways are low density, circuituous residential streets.

EMORY UNIVERSITY ARCHITECTURE.

By 1920 the first phase of original University construction was completed. The Italian Renaissance Style, using Georgia's native marble, was reflected in



QUADRANT BOUNDARIES MAP
EMORY UNIVERSITY CAMPUS

NO SCALE

the buildings of the quadrangle: the Theology, and Law and Physics buildings, and the Chemistry, and Anatomy and Physiology buildings. In years to follow, the quadrangle buildings included the Candler Library, and others functioned as the Old Law, History, Psychology, Physics, Biology and Geology buildings.

At the present time the Emory University campus buildings are marked less by stylistic features and more by complementary exterior surfaces and roof materials. The result has been a group of traditional and modern buildings sharing architectural similarities. The structures are natural concrete, or surfaces ranging from grey to beige to white, all within reach of the original palette. Red tile roofs are a means of connectiveness with the past.

Architectural developments have insured Emory University's continued growth in educational excellence and service. The original Law School Building in its 1915 Beaux Arts design has been renovated by noted architect, Michael Graves. It now houses the Department of Art History and the new Emory Art and Archaeology Museum. Noted local Peachtree Plaza architect, John Portman, is responsible for the 187,000 square foot gym that is within the hill directly across from another Portman building, a delightful new student center that is also an addition to, and an extension of, an early campus building that serves as the Alumni

Memorial Center. The student center is of grey marble, and is a circular form carved into a rectangle, all lighted by a two-story atrium. There is a modern seven-story chemistry building and a chapel by architect Paul Rudolph. The recently completed Woodruff Health Sciences Center Administration Building was built directly across from the Dental School and the railroad tracks. The Woodruff Building has a triangular mass tiered back on the northwest side with glass for a skin. The Dental School building is a 1959 pre-cast concrete building of five stories, containing modern, well-equipped clinics, laboratories, classrooms and seminar facilities.

EMORY UNIVERSITY AND THE LIFE SCIENCES

Every year there are almost 500 students pursuing a medical degree at various levels of advancement and concentration or specialization. The first two years include the Medical School's basic science curriculum and an introduction to the research of faculty and their laboratories. The M.D. can devote twenty weeks in his or her senior year to electives that can be in the basic science subjects or in research work. The M.D./Ph.D. Program requires a minimum of six years. Graduate study and research training for the Ph.D. Degree are available in the basic science departments of the School of Medicine: Anatomy and Cell Biology, Biochemistry, Biometry, Microbiology-Immunology, Pathology, Pharmacology, and Physiology; and in the Natural Science or Behavioral

Science Departments of the Graduate School of Arts and Sciences.[6]

The School of Nursing has about 150 young Baccalaureate Nurses who, during the first year of professional study, are enrolled in upper division Basic Health Science courses offered by the School of Medicine: Anatomy, Physiology, Biochemistry, Microbiology, Pharmacology and Nutrition.

The School of Dentistry has a total enrollment of about 360, all who must have pre-dental studies in General Biology and Physics. As dental students they study Anatomy, Biochemistry, Microbiology and Immunology, Pharmacology and Physiology.[7]

There is tremendous overlap and integration between science disciplines. The study of the Life Sciences at a graduate level will always be limited in enrollment to variables of resources, demand and funding. The University promotes Ph.D. Programs because a Master's Degree is not sufficient for completion of original research.

The research programs in Biology that lead to a Master's or Doctoral Degree may be pursued under staff supervision in several areas. The principal emphasis is on Genetics, Cellular and Developmental Biology, Ecology and Evolution, or Neurobiology and Behavior. Students in Biology are eligible to take courses in other departments of the Graduate School, including Anatomy, Biochemistry, Microbiology, Pharmacology and Physiology. There are

nearby Research Institutions that correlate needs with Biology graduate students: the U.D.P.H.S. Centers for Disease Control, the Yerkes Regional Primate Research Center, and the Georgia Mental Health Institute. Adjacent to Emory campus are the 40-acre Lullwater Field Laboratory and 12-acre lake for use by students and faculty.

As part of basic training, all graduate students must serve as teaching assistants in an undergraduate laboratory course.

The graduate program in Anatomy emphasizes Neuroscience and Cell Biology. The students also take courses and seminars in Developmental Biology, Biochemistry, and Physiology. Students become involved in laboratory research early and begin dissertation research by the start of the third year.

Graduate study in Biochemistry is for students desiring to pursue independent research in Biochemistry or Allied Biomedical Sciences.

Microbiology is a multidisciplinary field bringing together Molecular Biology, Cell Regulation, Molecular Genetics, Molecular and Animal Virology, and Host/Parasite-Oriented Medical Microbiology.

Immunology encompasses both Cellular and Humoral Immune Responses, Immunochemistry, and Immunobiology. Both Microbiology and Immunology require individual planning for each student after the first year as the overlap and integration make scheduling complicated.

Pharmacology is a Biomedical Science based on Biology, Organic Chemistry, Biochemistry, Physiology, and Bio-Physics.

Physics is a prerequisite for all disciplines and graduate research in Physics is in Bio-Physics and Radiological, Medical, and Health Physics.

Psychology is usually a prerequisite for the Medical and related field in health that require human interaction. Small animal laboratories are used by the graduates for research and demonstration purposes. There is a large collection of Great Apes at the Yerkes Center of Emory University, which carries out research sponsored in part by the Alcohol, Drug Abuse, and Mental Health Administration. The scientists of Yerkes collaborate in joint research with several of the University Science Departments.

CASE STUDIES

WELLESLEY COLLEGE SCIENCE CENTER

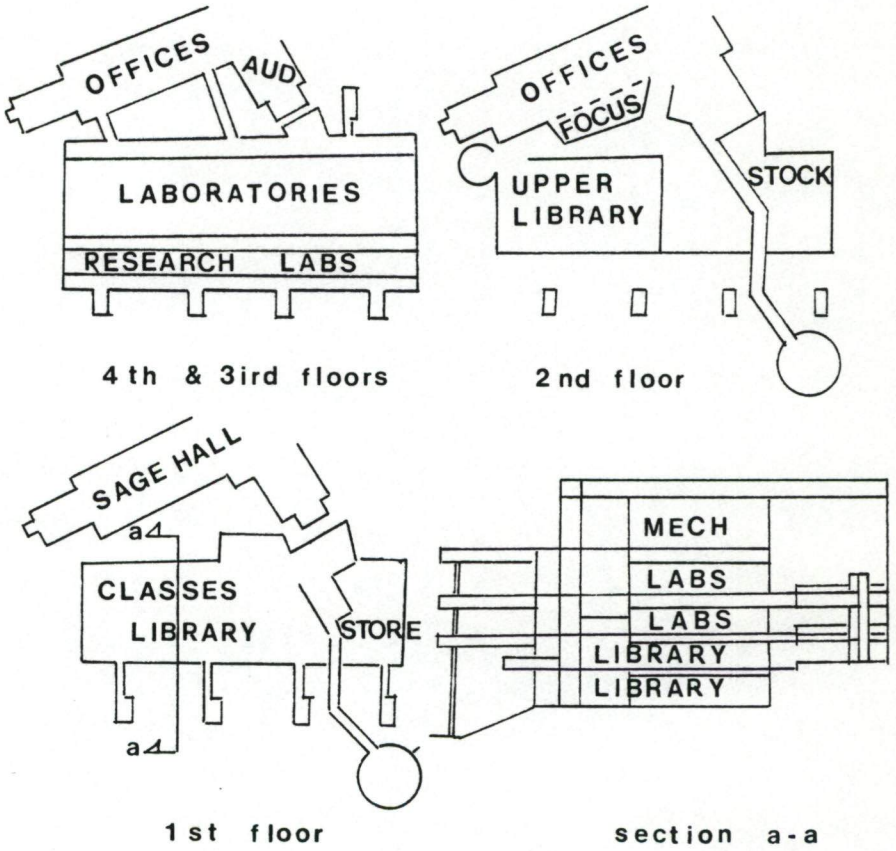
The new Science Center complex at Wellesley College, in Wellesley, Massachusetts, is a new building of reinforced concrete tied to a renovated Neo-Gothic neighbor. Architects of Perry, Dean, Stahl & Rogers, Inc. provided this women's college with a facility that would help maintain the school's strong tradition in the sciences.

Until this dramatic improvement, the College functioned with the eleven major science disciplines scattered throughout a number of different buildings on the campus grounds. As is occurring at many major universities, the vote is to merge the traditionally individual and discrete science disciplines into a single facility that allows for the interdisciplinary communication that is essential for the growth of modern science.

The Wellesley Science Center complex accommodates all science facilities within the renovated Sage Hall and the attached new building. The complex contains small research labs, larger laboratories, libraries, seminar rooms, lecture halls, and faculty and administration offices. Housed in the old Sage Hall are spaces for classrooms, seminars, labs, and faculty offices. The second and third floors have similarly located, large lecture auditoriums that all the departments can utilize. In the new building is a double-height library extending across the front; it occupies the first two, narrower

floors. The ground floor is level with the natural contour of a knoll that allows the stepping of the library.

There are two floors of laboratories above the ground floor which are served by four front fire stairs that are glass-enclosed metal cages hung from the supporting structural bays. A continuous access route to the fire stairs is insured by exterior metal grating walkways that extend the length of the building at the laboratory levels.



The language of the whole architectural ensemble is one of exposed columns, beams, ducts, exhaust stacks, colored metal elements, clear glass, and translucent walls. The open space between new and old buildings is

enclosed by 60-foot-high skylighted atrium. There are bridges across this space to tie the whole complex together at three levels. Circulation is more fluid using such bridges, as well as the ramps, spiral stairs, balconies, and multiple levels of the ground plans.

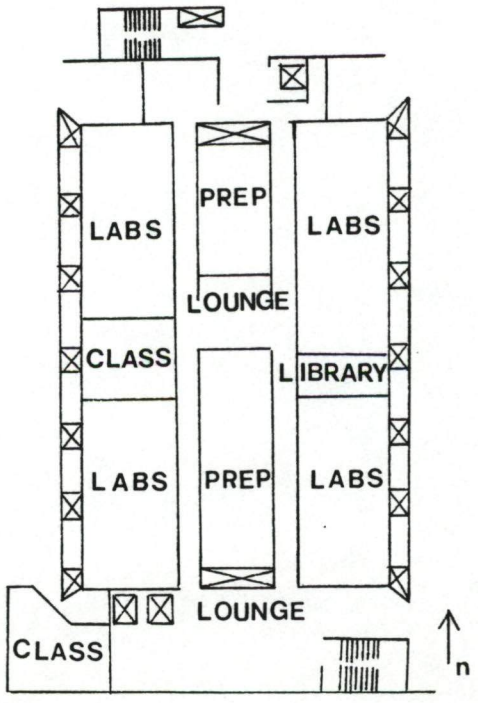
Within the larger 100-foot-long laboratory areas there are no permanent walls, so spaces can be arranged as student loads dictate. Any needed walls are fume hoods, chalkboards and tackboards. Flexibility is characteristic of the new building's service systems as well. There is a top-floor mechanical space from which all mechanical, electrical, and plumbing services drop between shear walls within a core area that runs next to the main longitudinal corridor. No services penetrate the carpeted floors except at the service core; from the core, gas, air, vacuum, electricity, and water move transversely above the ceiling. Services drop down via hoses to turrets that outlet at student's stations.

The features of the Wellesley College Science Center that are exemplary are: the separation of the functions of labs, offices, and classes into zones; the skylighted atrium space that aids circulation; the lack of permanent walls between the laboratories; and the top-floor mechanical space and its flexible service systems.

SHERMAN FAIRCHILD CENTER FOR THE LIFE SCIENCES

More than any other building on the Columbia University campus in New York, the Sherman Fairchild Center for the Life Sciences emerged from the realities of the site. Architects of Mitchell/Giurgola designed a paneled structure whose lightness was suitable atop the existing five-story podium below. The scientists who work into the night keep the building glowing in the patterns of the fenestration that are expressive in quality as well as impressive.

The interior spaces are a contrast of the "no-place-to-fool-around" zone of laboratory life and the communal areas for creative interactions such as the lounges and seminar rooms. The spaces remain separated physically as well as psychologically, a design that works for the scientists who use it.



Typical Floor

The visual effect of the Fairchild Center during the day is one calculated to show volume rather than mass. The major design element is the screen of tile paneling hung from the steel skeleton. The aluminum tiles are terra-cotta colored, each reading individually because it is set in white-enameled aluminum trim.

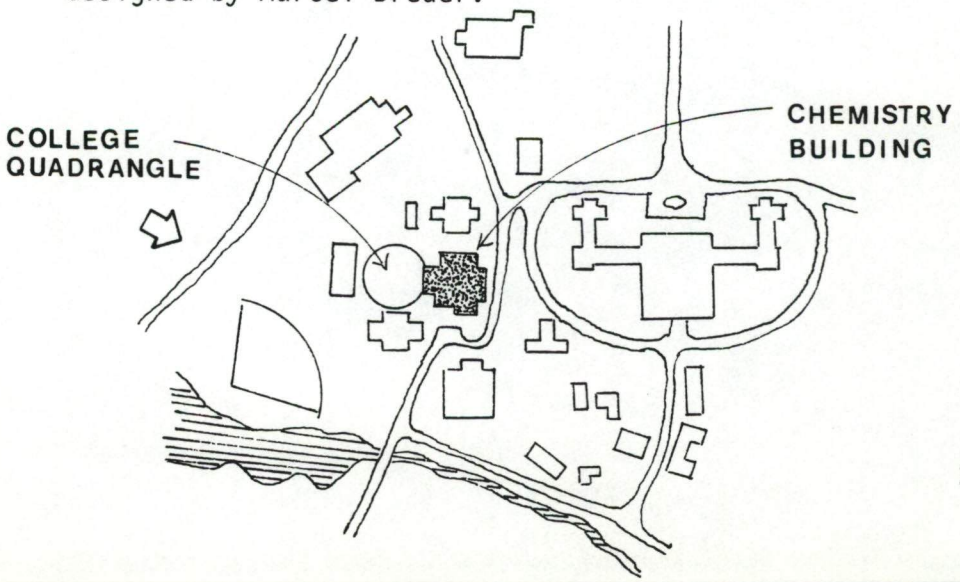
The panel provides a double wall enclosure which screens light along the east and west facades. The laboratories are located in east and west spaces where glare has been reduced, but the good feature of natural light remains. Because the laboratories were designed for possible future expansion or reduction, the overhead utilities remain exposed, with light fixtures aligned perpendicular to pipes to create a grid effect. The exterior wall panels in the interstitial spaces of the double wall system house the ventilation ducts for the labs. The northeast exterior corner of enclosure is lightened up literally and formatively with a glass enclosed stairway.

The double wall for light screens and mechanical shafts, the direct separation of work and rest spaces, the use of aluminum tiles, and the glowing patterns created by the fenestration lighted up at night are all reasons that the design of Sherman Fairchild is notable.

SEELEY G. MUDD CHEMISTRY BUILDING

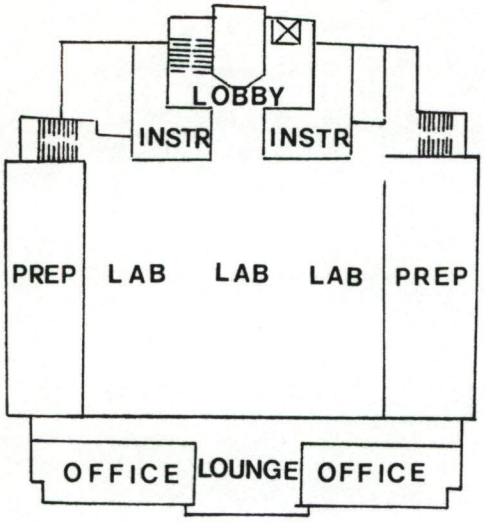
The Seeley G. Mudd Chemistry Building at Vassar College in Poughkeepsie, New York, is not a Life Science building, but it is a Physical Science building and it serves as a superior example of a building that provides an environment fertile for growing good science with no sacrifice of architecture. Once again it is the firm, Perry, Dean, Rogers & Partners, who are successful in providing a science facility that meets the needs of a college's challenges. Two opposing forces to be reckoned with were the context of existing science facilities in the college quadrangle and the program that met the demands of the Chemistry Department.

The architects were creative in their handling of the limitations imposed by kinship with two look-alike Neo-Georgian buildings across from and east of the new structure, an Italianate design to the west, and a '60s Modern facility at an outside corner. More companions on the central campus side are a Bavariansque Victorian Main Building and a white-brick dormitory pavilion designed by Marcel Breuer.

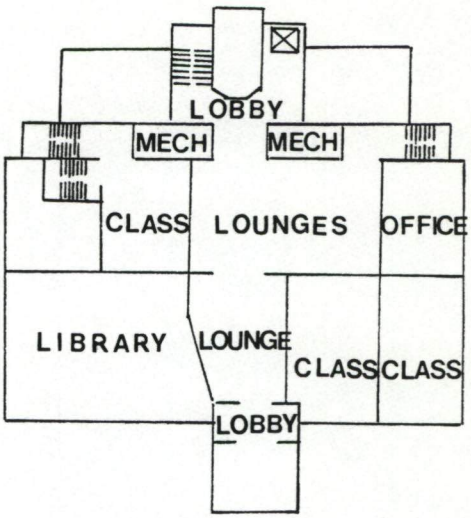


The architects chose as reference the existing science facilities in the quadrangle that the Seeley Mudd Building was to complete, and they established a volumetric relationship with them using a red-brick block that matched existing depth, width, and height. On the south facade is a solar wall whose background theme is piers and panels that mimic the nearby traditional masonry facades. The false roof of green-tinted and battened metal is a modern functioning mechanical penthouse that answers the existing weathered-copper roofs nearby.

Inside of the building all is working for the advancement of science. There is a straightforward organization of the three-story space that places the laboratories on the first two floors and the classrooms, lounges, library, and administration suite on the third floor. A row of faculty offices, lit by skylights, is in a terrace jutting from the first level. From the exterior the vertical circulation occurs in the add-on elements, so the major functions occupy the principal volume of the building. One of the lab floors is partially below grade, both floors being essentially large open spaces whose expansiveness is a result of placement of support spaces along the perimeter. Rows of fume hoods provide some delineation of the large lab spaces into three specific sectors.



Lower Level



Upper Level

The mechanical system has heat recovery components that require maximum mechanical space--thus the added height of a penthouse-disguised-as-roof. The fume hoods provide special exhaust systems for the laboratories and throughout the facility there is task-ambient lighting that is supplemented with natural light from clerestories and the block-glazed seams which combines light transmission with insulation. The solar wall interacts with the central mechanical system for general heating, provides make-up air for the fume hood exhaust system, contributes direct solar gain by a steel-framed glass screen, and brings light and views into interior spaces. Three sides of the building envelope are almost windowless slabs of brick, minimizing winter heat loss and summer gain. The industrial nature of the interior spaces is softened with light, light reflection, and color.

SITE

THE SITE

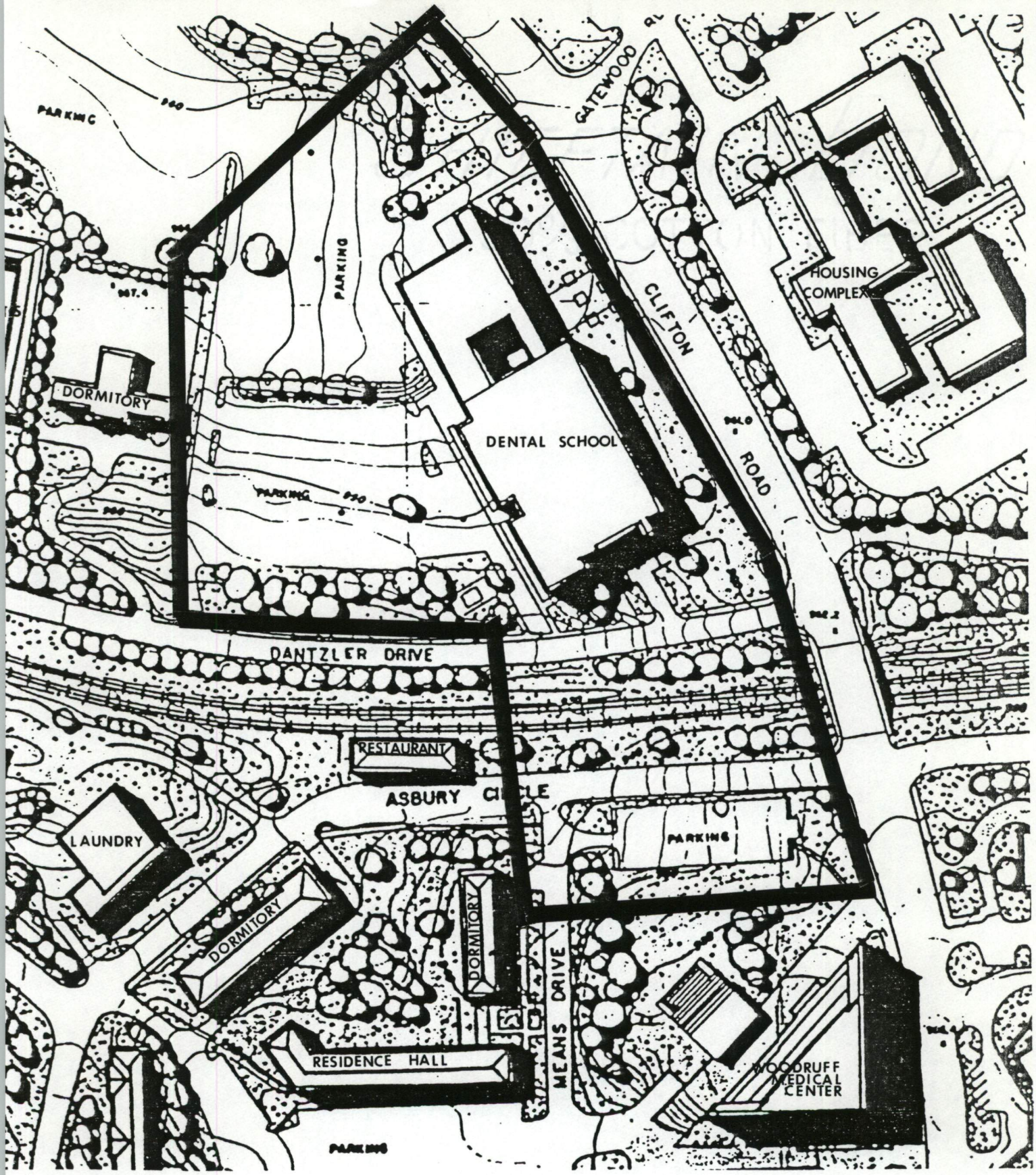
The site for the Life Science Research Building is one selected by the Planning Committee of Emory University. The site location is in the northwest quadrant, to the west of the existing Dental School; it bridges the divisional Seaboard Coast Line Railroad tracks and terminates in the back parking lot of the Woodruff Health Sciences Center Administration Building.[8]

There is a gradual slope on most of the site except at two points: one is at the 960-foot contour located perpendicular to the 5-story height change in the Dental School, and the other is at the trenchlike vale where the noisy, vibration-generating railroad tracks run. The tracks are located between Dantzler Drive and Asbury Circle Road.

To the west of the site is a 4-story brick dormitory. To the east of the Dental School is the construction site of a new student housing complex. To the north of the new housing is an existing tower apartment building; and to the south is the entrance to the large Lullwater Park and Lake. The outdoor recreational area will lend its beauty and solitary paths to the students and scientists occupying the new research building.

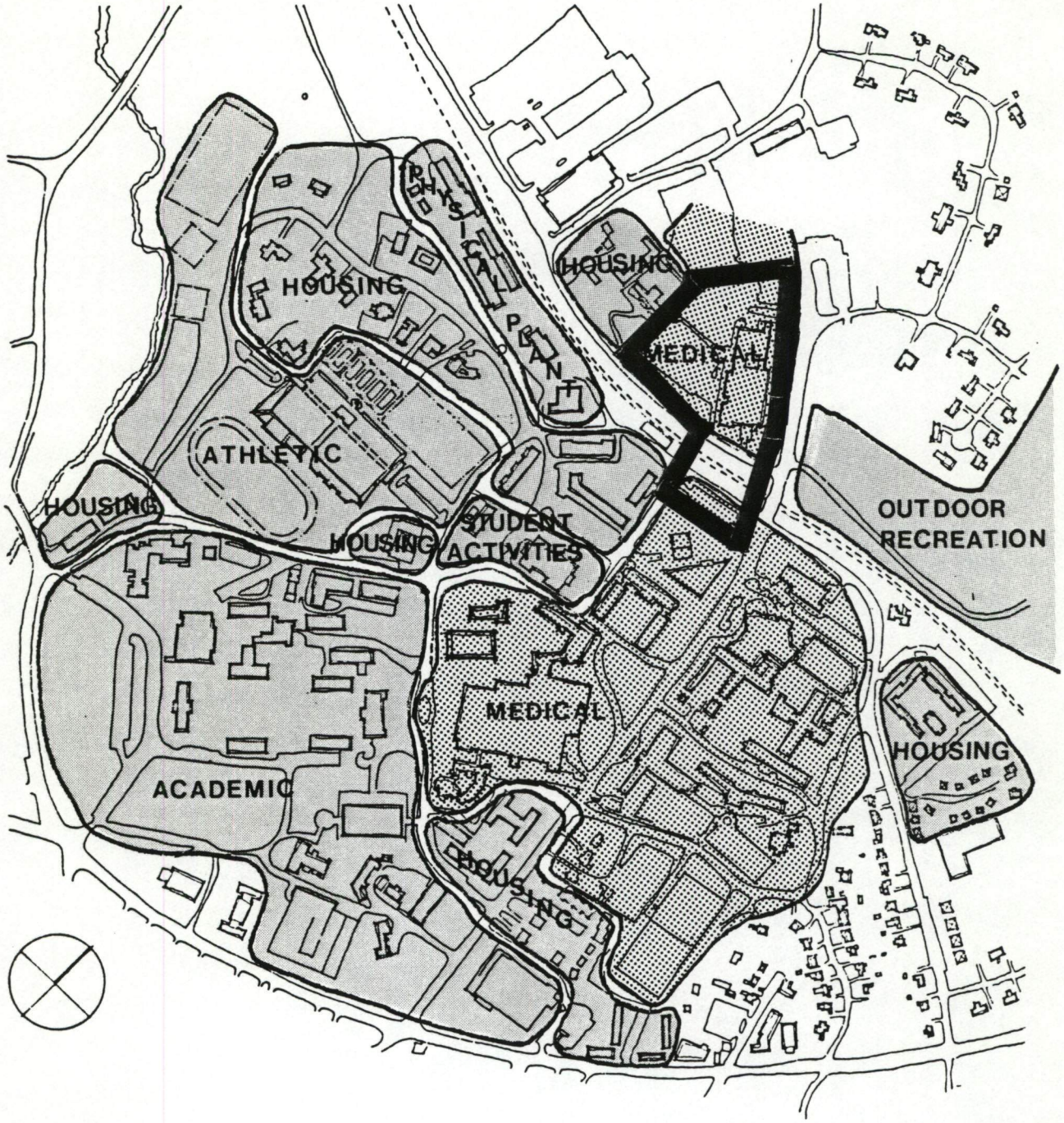
The site is directly accessible to faculty members, many of whom typically work in the hospitals, clinics, and other Emory Medical institutions located along Clifton Road to the southwest and southeast. The students who may

have classes on central campus have less direct access; the situation will be improved through a pedestrian link that will take off from the existing parking lot located parallel to Asbury Circle and perpendicular to Means Drive. A flybridge from the Dental School will enhance student and faculty circulation over to the new Life Science Research Building.



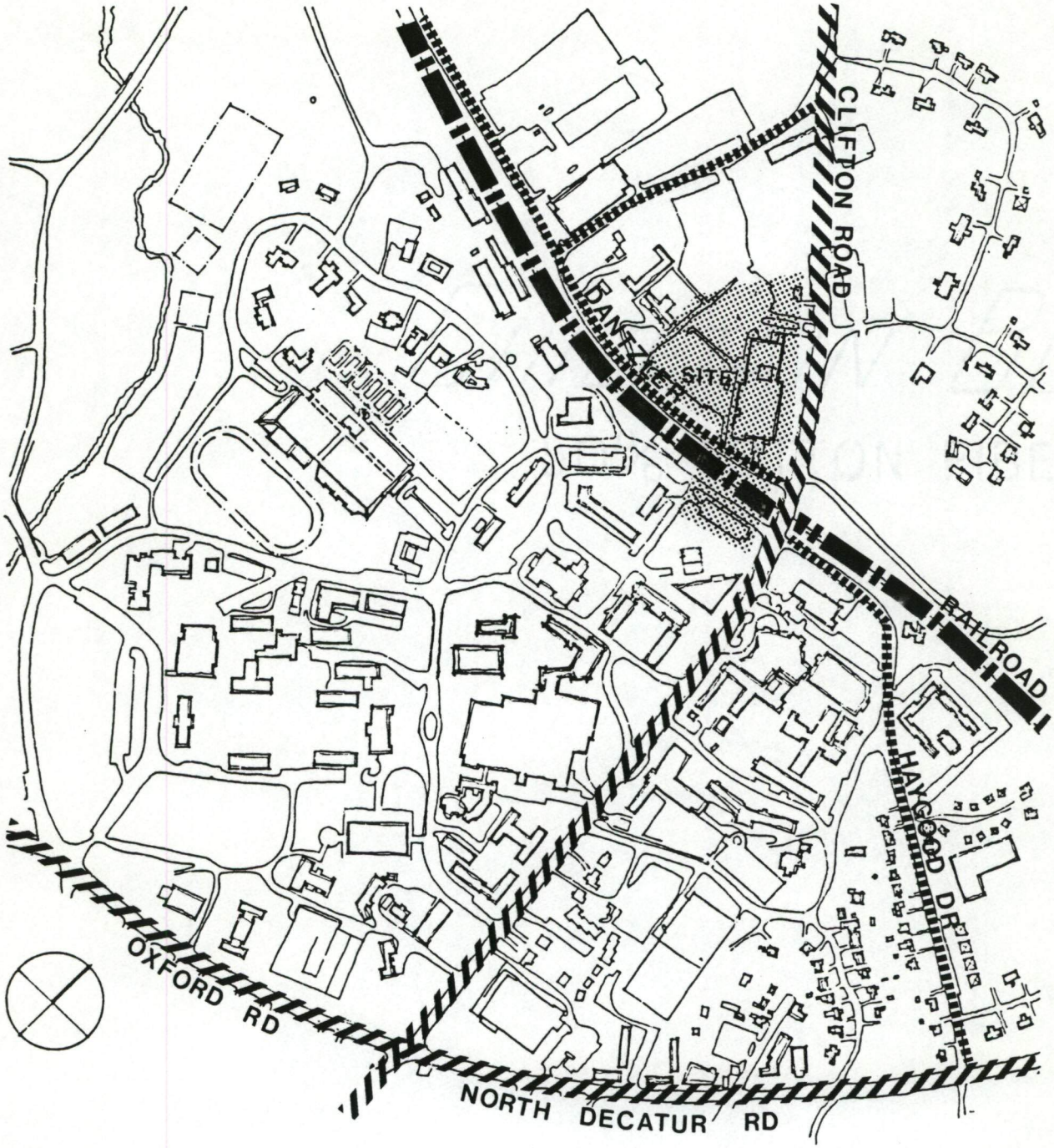
THE SITE

NO SCALE



LAND USE
EXISTING CAMPUS PLAN

NO SCALE



VEHICULAR CIRCULATION
EXISTING CAMPUS PLAN

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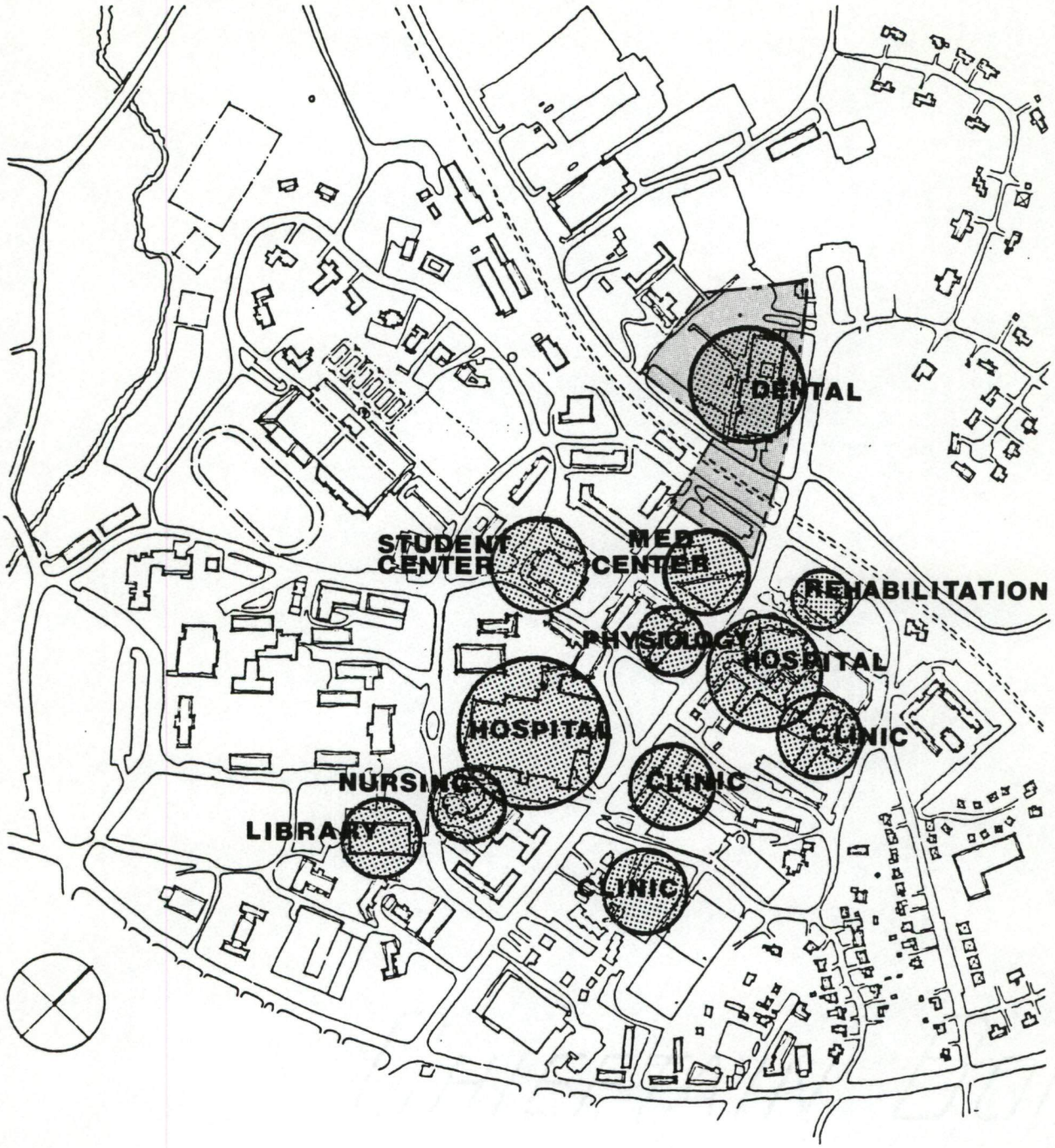

FUNCTIONAL RELATIONSHIPS EXISTING CAMPUS PLAN

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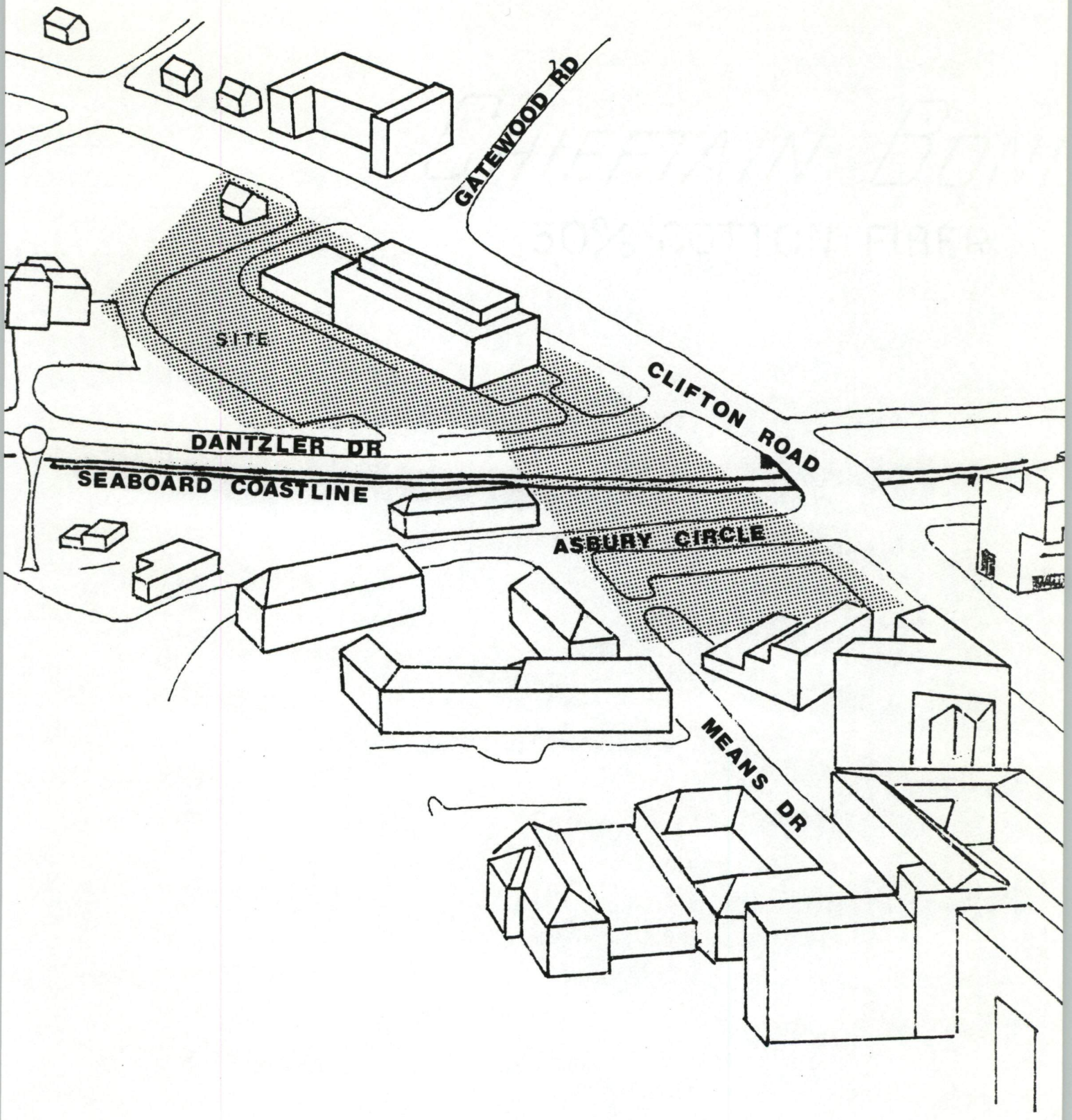


AXONOMETRIC/STRUCTURES IN VICINITY OF SITE

PROGRAM REQUIREMENTS

		NET SQUARE FOOTAGE
I.	MEDICAL SCHOOL FACILITIES	67,391 SF
	A. Biochemistry Department	17,774
	B. Microbiology/Immunology Dept.	15,781
	C. Animal Facility	13,220
	D. Pharmacology Dept.	13,658
	E. Unassigned Space	3,218
II.	WOODRUFF CHAIR FACILITY	3,740 SF
III.	NEUROSCIENCES CHAIR FACILITY	3,722 SF
IV.	ARTS AND SCIENCES FACILITIES	45,043 SF
	A. Biology Department	29,808
	B. Psychology/Anthropology Dept.	3,910
	C. Physics Department	3,555
	D. Divisional Space	7,770

PROGRAM

PROGRAM AND SPACE ASSIGNMENT

LEVEL ONE: (ground level) NET SQUARE FOOTAGE

Unenclosed:

Terraced Landscape for Outdoor Lounge
Bike Racks
Two Access Drive
Loading Platform

Enclosed:

Faculty Parking
Three Cores - Elevators & Mechanical Shafts
Three Fire Stairs
Snack Bar

LEVEL TWO:

IV. ARTS AND SCIENCES

A. Biology	29,808	SF
Offices:	5,474	SF
18 Faculty Offices	2,700	
1 Chairman's Office	290	
1 Administrative Asst. Office	150	
1 Chairman's Secretary Office	110	
1 Faculty Planning Coordinator's Office	110	
1 Business Manager & Grants Accountant Office	150	
Reception Area	220	
Secretarial Pool	260	
Xerox/Memo/Files Room	320	
3 Conference Rooms	504	
1 Computer Room	340	
1 Storage Room	320	
Laboratories:		
67 Research Labs	21,440	SF
Ancillary:	2,894	SF
3 Darkrooms	210	
4 Autoclave/Glasswash Rooms	580	
4 Instrument Rooms	640	
4 Cold Rooms	473	
3 Environmental Rooms	528	
1 P-3 Containment Room	143	
1 Shop/Stockroom	320	

Common Area:	3,010 SF
1 Lounge	360
1 Student Study Area	1,100
3 Women's Toilets	775
3 Men's Toilets	775

Pedestrian Link:

The student and faculty pedestrian link bridges the railroad tracks and enters the building at the Second Level. Stairs to Level One occur at two points. The link is an enclosed space but the square footage, both net and gross, is not included in the building's calculations.

Net Total for Pedestrian Link	6,450 SF
Gross Total for Pedestrian Link	7,095 SF

NET TOTAL FOR LEVEL TWO: 32,818 SF

GROSS TOTAL FOR LEVEL TWO: 54,714 SF

LEVEL THREE:

I. MEDICAL SCHOOL

A. Biochemistry 17,774 SF

Offices:	3,990
19 Faculty Offices	2,850
4 Administration Offices	440
1 Solvent Room	150
1 Conference/Library	290
1 Kitchen/Mail Room	260
Laboratories:	
35 Research Labs	11,200 SF
Ancillary:	2,584 SF
3 Cold/Prep Rooms	960
2 Tissue/Cell Culture Rooms	440
2 Equipment Rooms	336
1 Sequence/Synthesis Room	220
1 Radioactive/Solvent Hoodroom	230
1 Darkroom	100
1 Glasswash Room	198
1 Autoclave/Incubator Room	100

B.	Microbiology/Immunology	15,781 SF
	Offices:	3,824
	13 Faculty Offices	2,460
	1 Chairman's Office	170
	1 Business Manager's Office	170
	1 Bookkeeper's Office	170
	Secretary/Reception Area	210
	2 Storage Rooms	144
	1 Conference/Library	240
	Secretarial Pool	260
	Laboratories:	9,560 SF
	23 Research Labs	7,360
	11 Small Research Labs	2,200
	Ancillary:	2,397 SF
	1 Autoclave Room	220
	1 Prep Room	230
	1 Centrifuge Room	195
	1 Glasswash/Oven Room	176
	1 Chemical/Radiation & Safety Hoodroom	165
	1 Biohazard Hoodroom	165
	1 Large Equipment Room	250
	2 Darkrooms	178
	1 Warm Room	100
	2 Cold Rooms	200
	1 Flammable/Radiation Storage Room	90
	1 Fermentor Room	100
	2 Freezer Rooms	238
	Common Area:	2,060 SF
	2 Lounges	510
	3 Women's Toilets	775
	3 Men's Toilets	775
NET TOTAL FOR LEVEL THREE:		33,555 SF
GROSS TOTAL FOR LEVEL THREE:		59,209 SF

LEVEL FOUR:

I. MEDICAL SCHOOL

D.	Pharmacology	13,658 SF
	Offices:	3,685
	11 Faculty Offices	2,010
	4 Post Doc/Graduate Offices	425

	Secretary/Reception Area	260
	1 Chairman's Office	250
	1 Administrative Asst. and Accountant's Office	176
	3 Storage Rooms	324
	1 Conference Room	240
	Laboratories:	9,016 SF
	7 Research Labs	2,240
	11 Large Research Labs	6,776
	Ancillary:	957 SF
	1 Darkroom	128
	1 Drafting Room	189
	1 Instrument Room	320
	4 Cold Rooms	320
II.	WOODRUFF CHAIR	3,740 SF
	3 Offices	594
	1 Conference Room	266
	9 Research Labs	2,880
III.	NEUROSCIENCES CHAIR	3,722 SF
	3 Offices	576
	1 Conference Room	266
	9 Research Labs	2,880
IV.	ARTS AND SCIENCES	
	C. Physics	3,555 SF
	Offices:	1,507
	1 Chairman's Office	150
	1 Administrative Asst. Office	150
	Secretarial/Reception Area	220
	1 Work/File/Photocopy and Mail Room	220
	1 Conference Room	260
	1 Reference Library	507
	Laboratories:	
	2 Chemical Labs	640 SF
	Ancillary:	1,408 SF
	4 Darkrooms	200
	2 Helium Recovery Rooms	200
	1 Computer Room	168
	1 Idle Equipment Room	336
	1 Shop/Storeroom	404

D. Divisional Space	7,770 SF
16 Offices	2,400
24 Small Research Labs	5,280
1 Machinist Room	90
Common Area:	1,707 SF
1 Lounge	319
3 Women's Toilets	694
3 Men's Toilets	694
NET TOTAL FOR LEVEL FOUR	34,152 SF
GROSS TOTAL FOR LEVEL FOUR	58,249 SF

LEVEL FIVE:

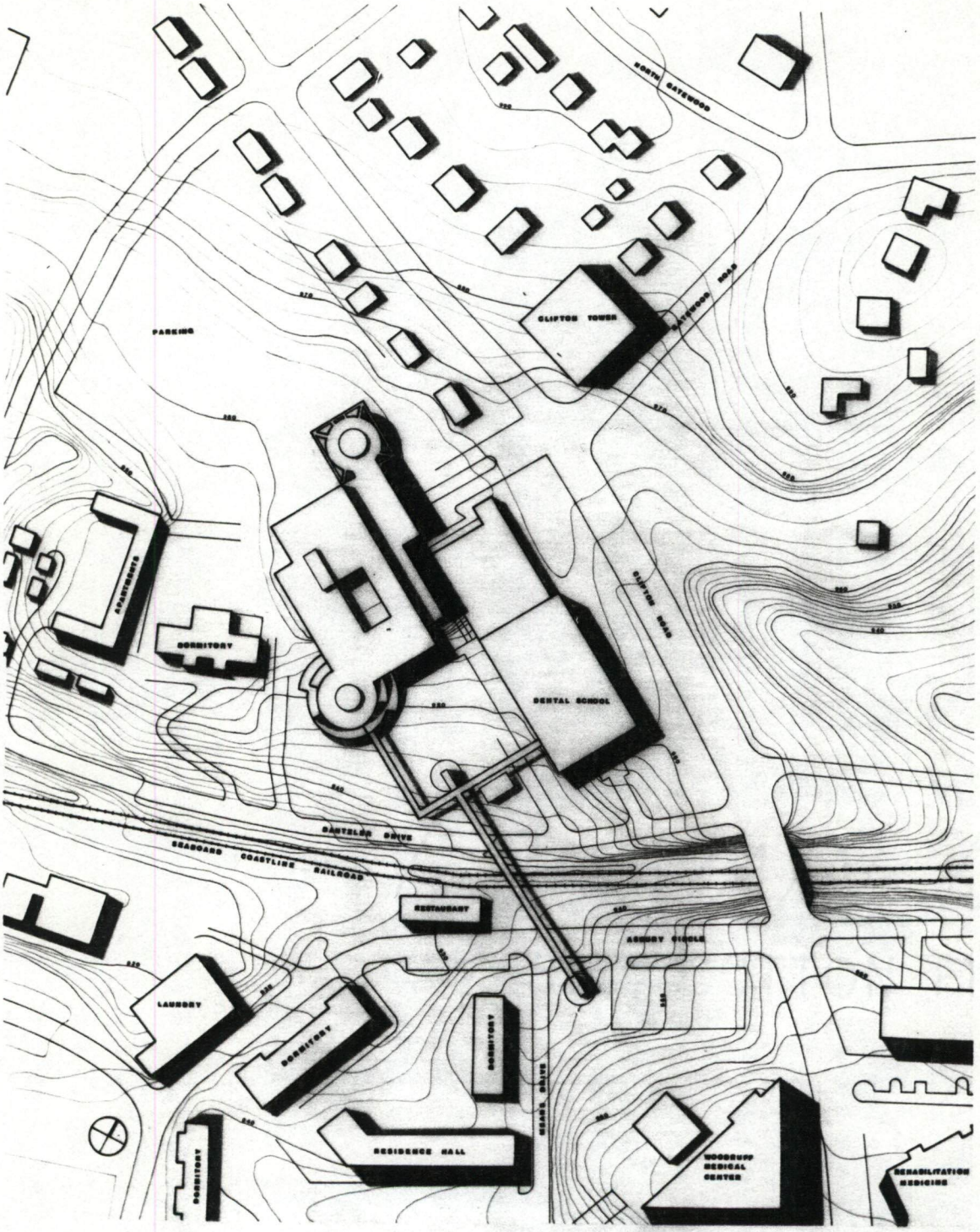
I. MEDICAL SCHOOL

C. Animal Facility	13,220 SF
Offices:	1,440
1 Chief Veterinarian's Office	200
1 Veterinarian Office	165
1 Pathologist Office	165
1 Colony Administrator's Office	165
1 Secretarial Office	170
1 Conference Room	240
1 Work/File Room	170
1 Business Manager's Office	165
Laboratories:	1,904 SF
1 Clinical Lab	308
1 Necropsy Lab	200
1 Pathology Lab	200
1 Surgery Room	200
1 Instrument Room	180
1 Scrub Room	200
Pharmacy & Sterile Prep Area	308
1 Bench Lab	308
Ancillary:	3,198 SF
1 Cage Wash Room	1,050
1 Cage Storage & Clean Room	750
1 Male Locker/Change Room	308
1 Female Locker/Change Room	308
1 Food & Bedding Storage Room	300
1 Waste Holding Room (ambient)	150
1 Waste Holding Room (refrig.)	150
1 Irradiation Room	180

PROGRAM AND SPACE ASSIGNMENT (Cont'd.)

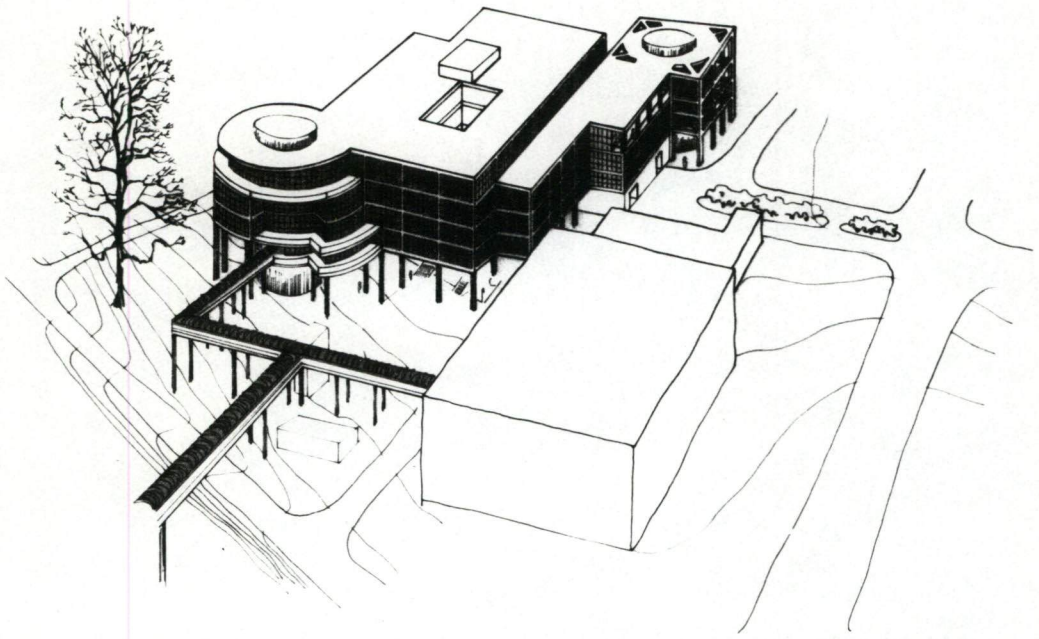
	Animal Holding Rooms:	6,680 SF
	(Non-barrier Type)	
	26 Small Animal Holding Rooms	3,380
	10 Small Animal Holding Rooms	1,100
	4 Small Animal Hooded Rooms	440
	1 Small Animal Cold Room	110
	1 Small Animal Warm Room	110
	(Barrier Type)	
	14 Small Animal Holding Rooms	1,540
E.	Unassigned Space	3,218 SF
	4 Offices	660
	3 Large Research Labs	2,070
	1 Research Lab	308
	1 Storage Room	180
IV.	ARTS AND SCIENCES	
B.	Psychology/Anthropology	3,910 SF
	4 Offices	660
	2 Drylabs	616
	8 Research Laboratories	2,464
	1 Storage Room	170
	Common Space:	1,198 SF
	1 Lounge	170
	2 Women's Toilets	514
	2 Men's Toilets	514
NET TOTAL FOR LEVEL FIVE		21,546 SF
GROSS TOTAL FOR LEVEL FIVE		40,312 SF
NET TOTAL FOR LIFE SCIENCES RESEARCH BUILDING		122,071 SF
GROSS TOTAL FOR LIFE SCIENCES RESEARCH BUILDING		212,484 SF

GRAPHIC SOLUTION

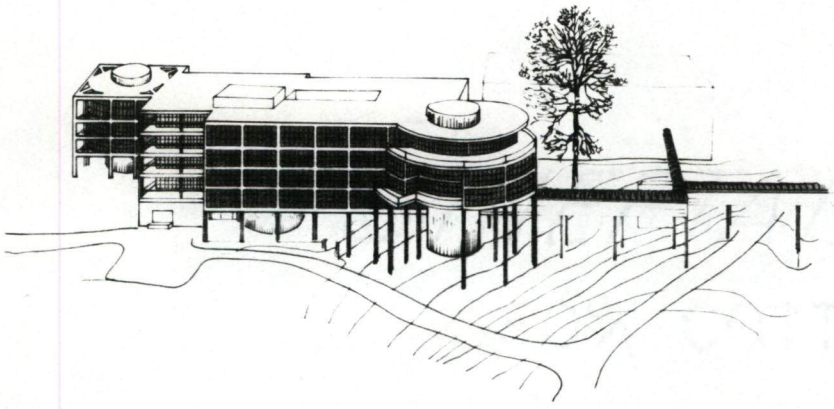


VICINITY SITE PLAN

SCALE: 1/500" = 1'-0"



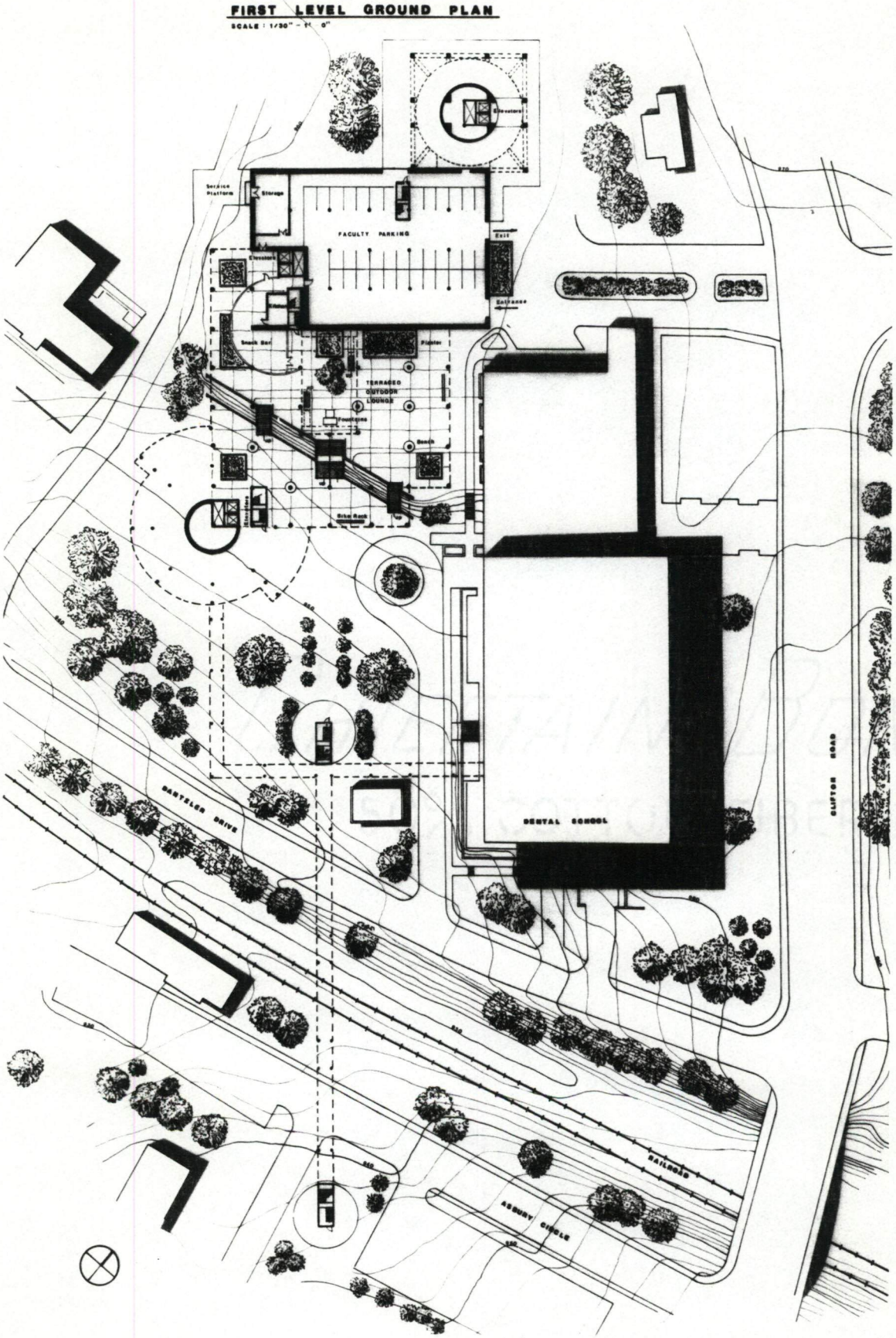
SOUTH·EAST PERSPECTIVE

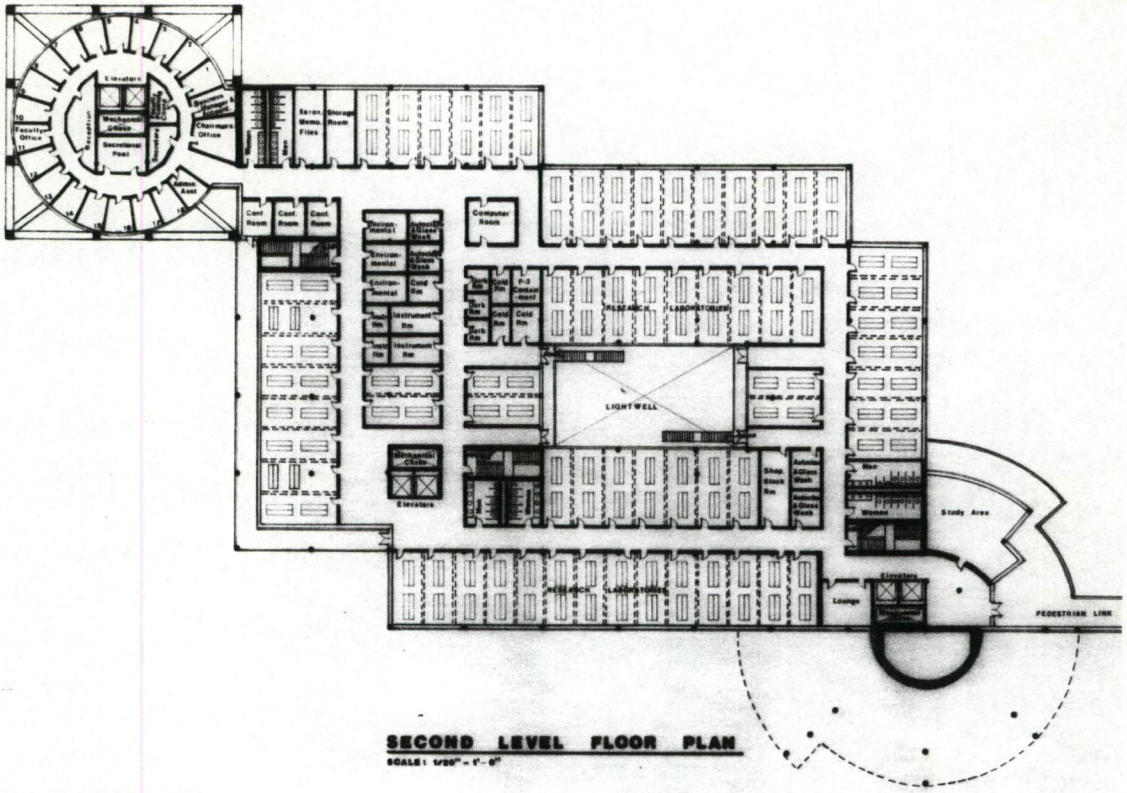


WEST PERSPECTIVE

FIRST LEVEL GROUND PLAN

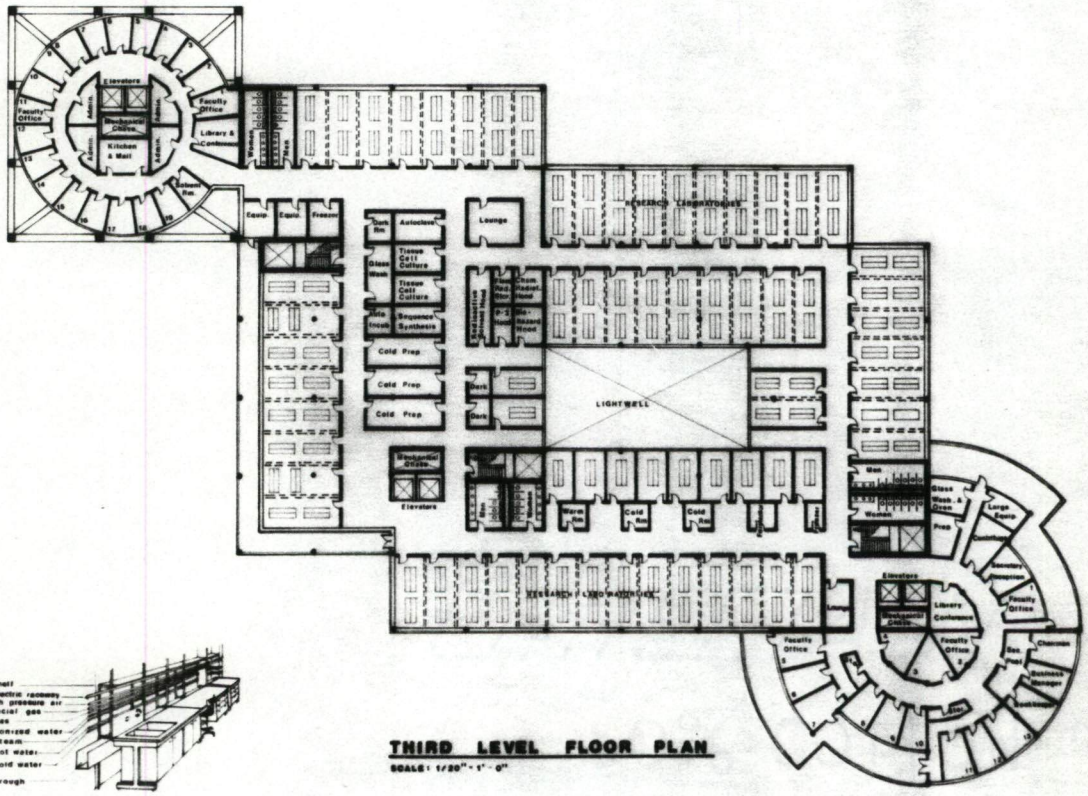
SCALE : 1/30" - 1' - 0"





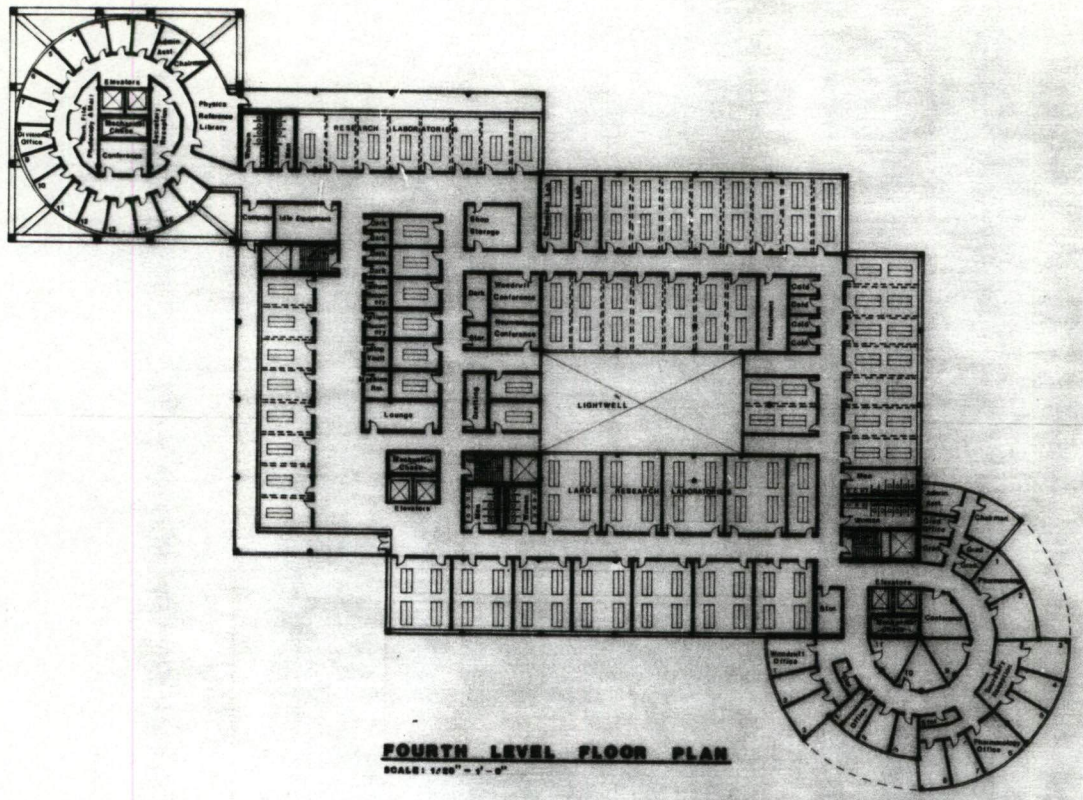
SECOND LEVEL FLOOR PLAN

SCALE: 1/20" = 1'-0"



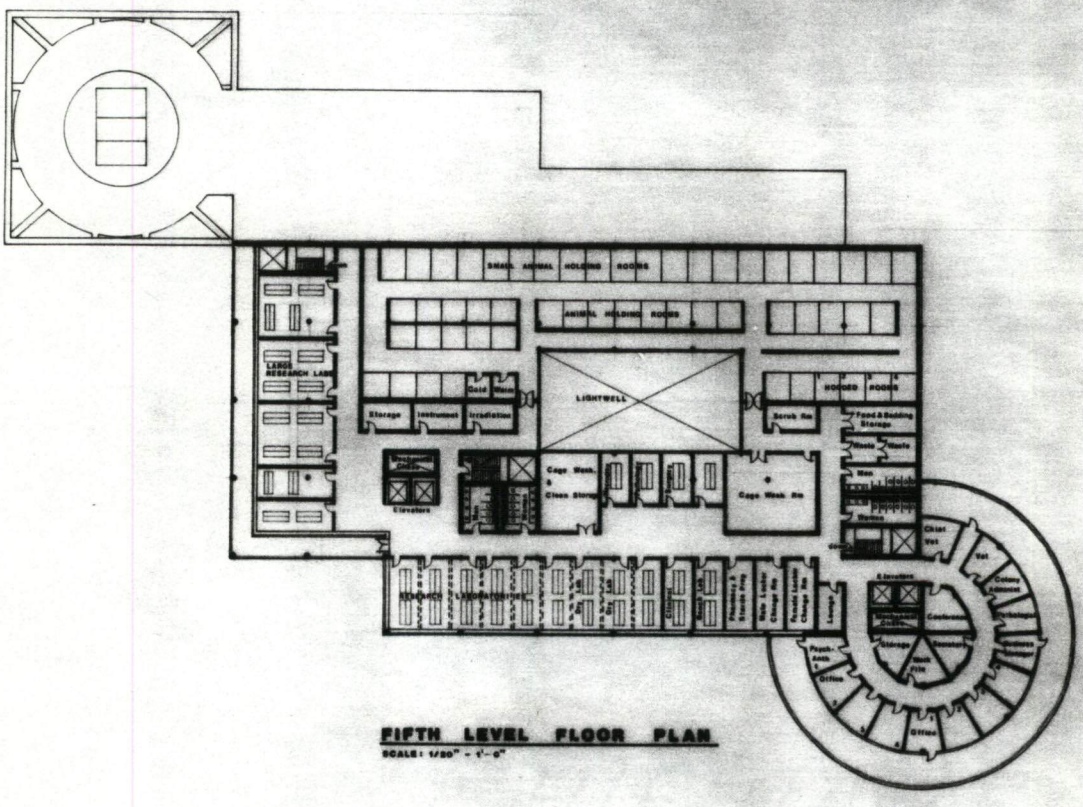
THIRD LEVEL FLOOR PLAN

SCALE: 1/20" = 1'-0"



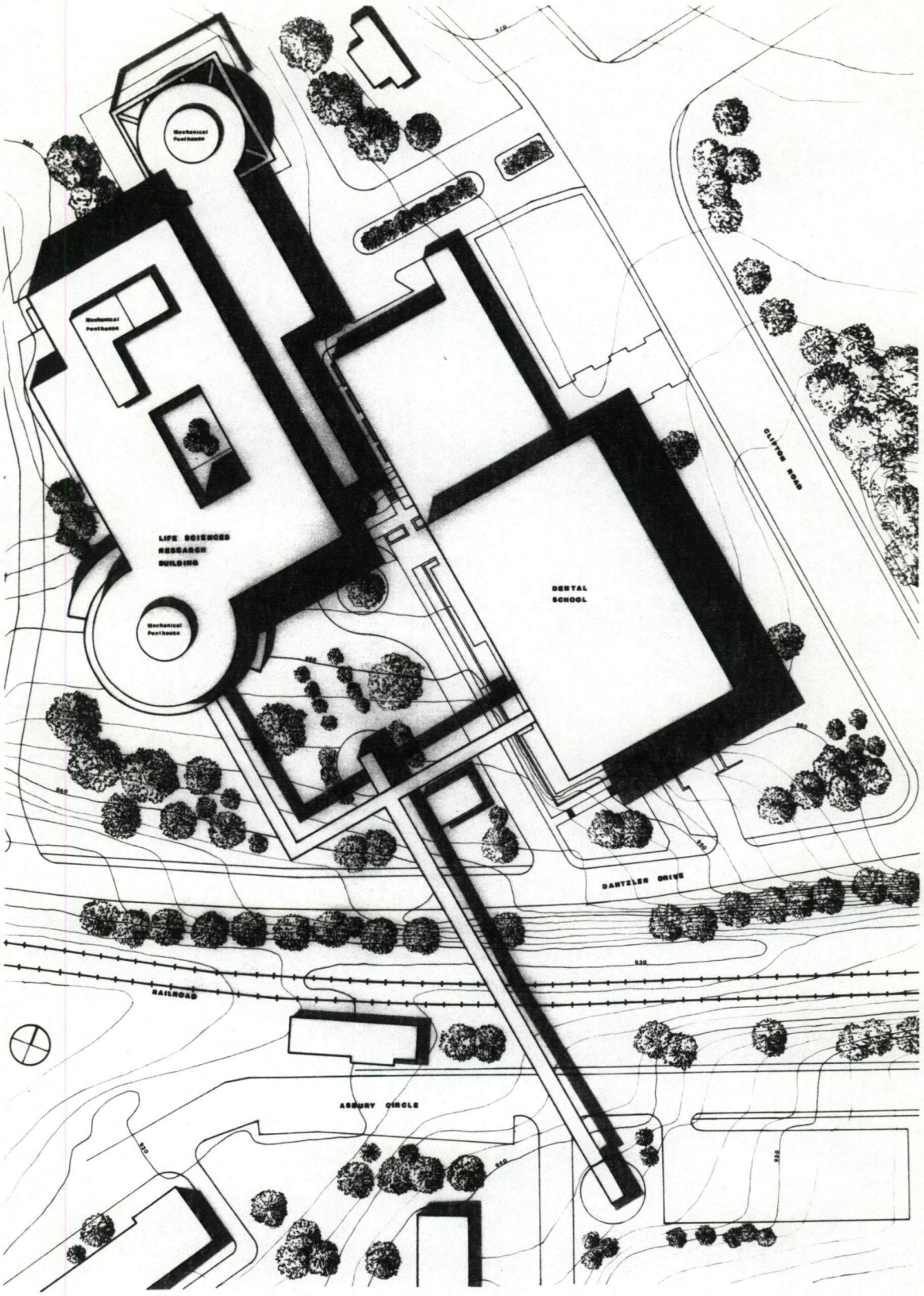
FOURTH LEVEL FLOOR PLAN

SCALE: 1/20" = 1'-0"



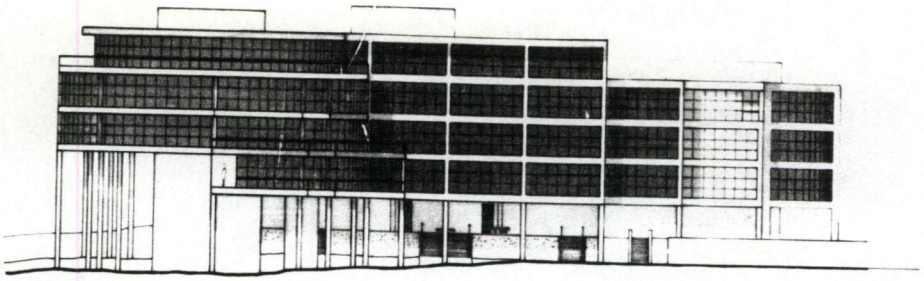
FIFTH LEVEL FLOOR PLAN

SCALE: 1/20" = 1'-0"

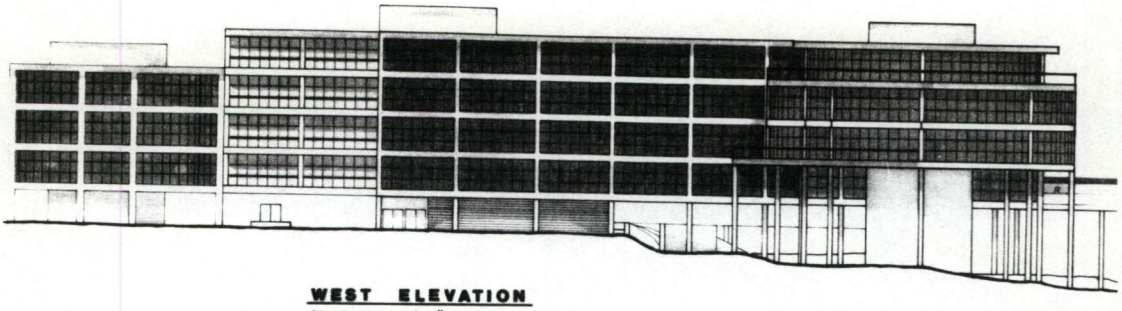


ROOF PLAN

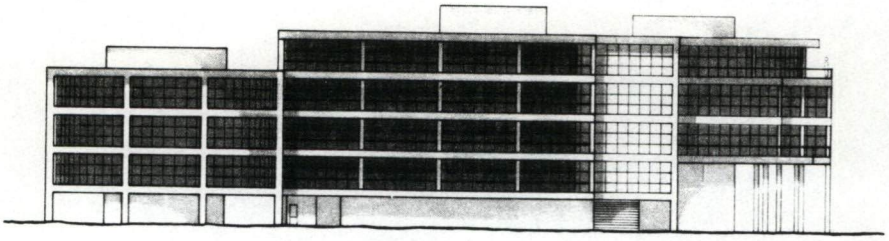
SCALE : 1/30" = 1'-0"



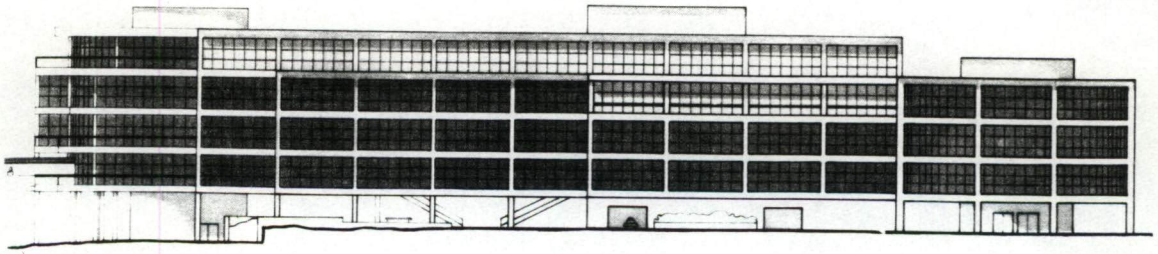
SOUTH ELEVATION
SCALE : 1/20" - 1'-0"



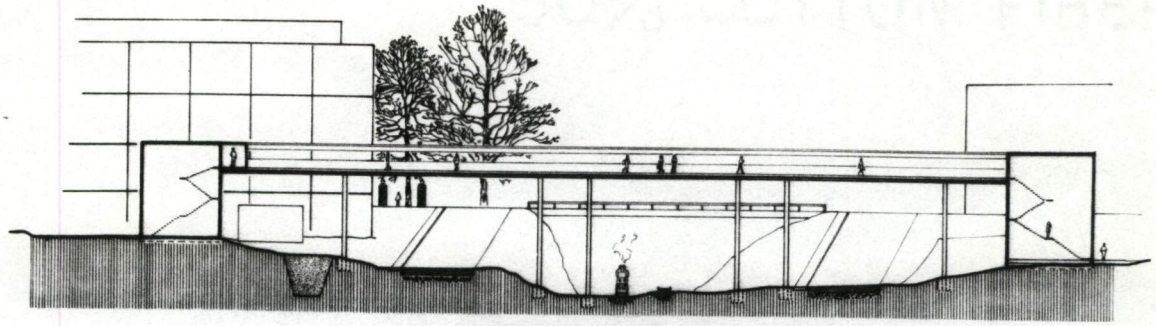
WEST ELEVATION
SCALE : 1/20" - 1'-0"



NORTH ELEVATION
SCALE : 1/20" - 1'-0"

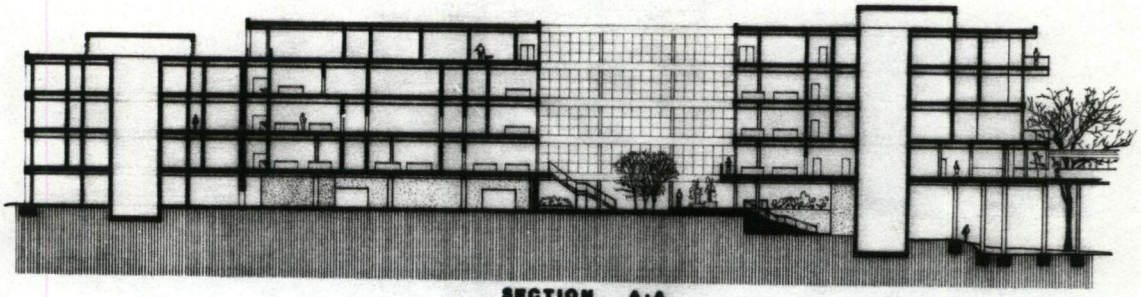


EAST ELEVATION
SCALE : 1/20" - 1'-0"



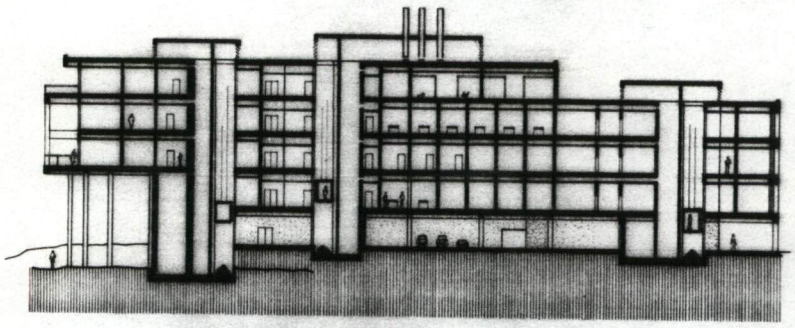
SECTION P·P Pedestrian Link

SCALE : 1/100" = 1'-0"



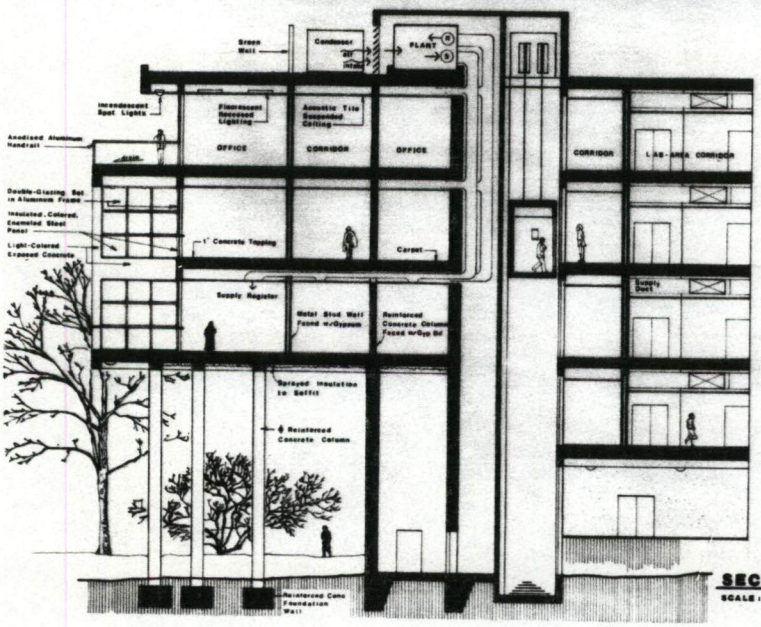
SECTION A·A

SCALE : 1/50" = 1'-0"



SECTION B·B

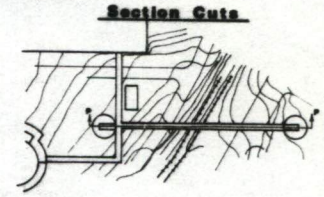
SCALE : 1/50" = 1'-0"

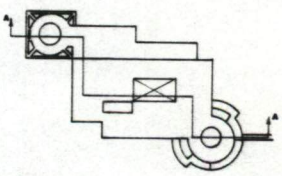


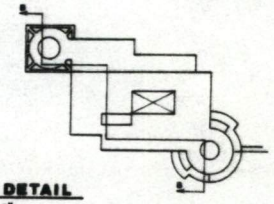
SECTION DETAIL

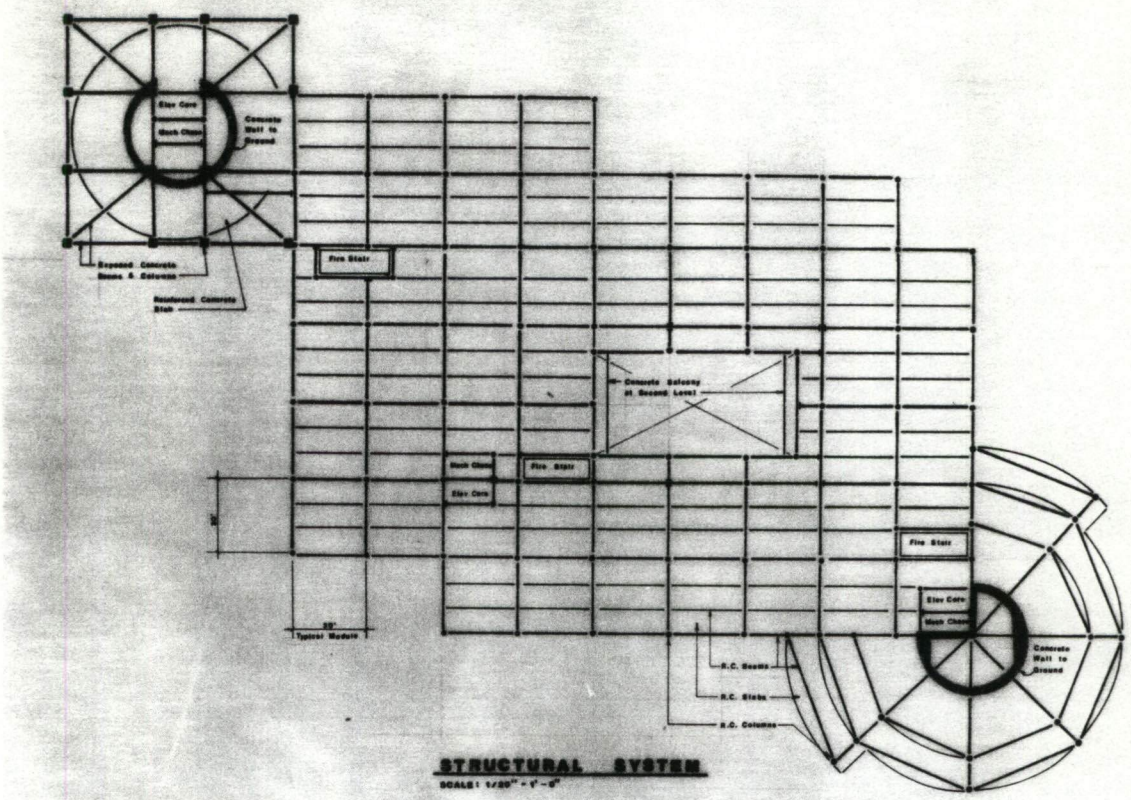
SCALE : 1/8" = 1'-0"

Section Cuts



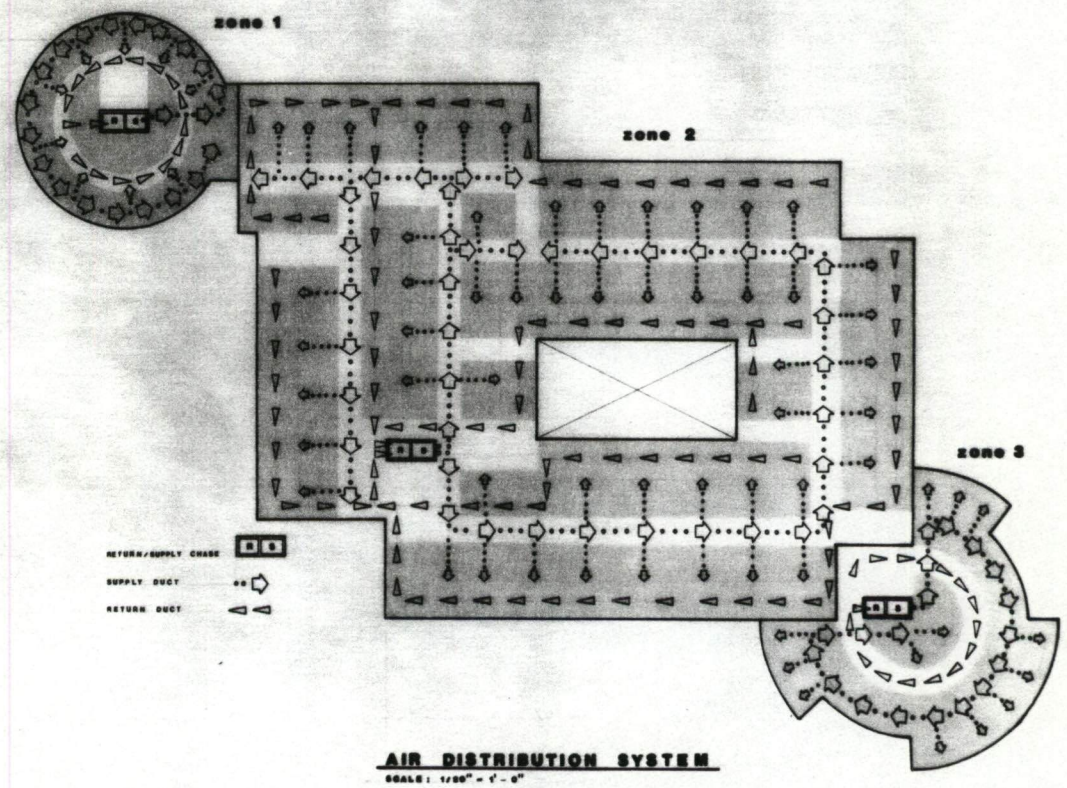






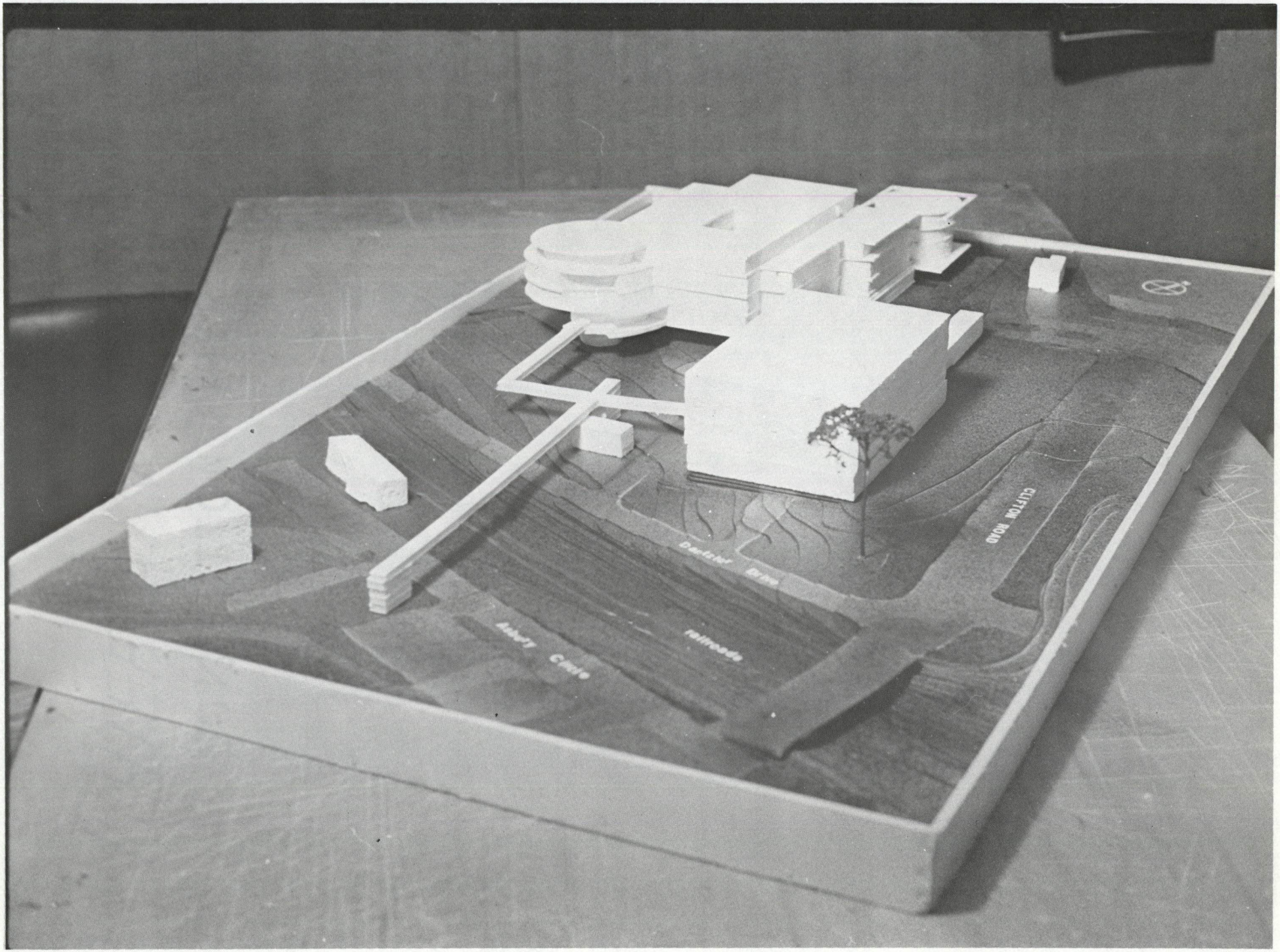
STRUCTURAL SYSTEM

SCALE: 1/20" = 1'-0"



AIR DISTRIBUTION SYSTEM

SCALE: 1/20" = 1'-0"


CLIFTON ROAD

RESOURCES

NOTES

1. Paul M. Churchland and Clifford A. Hooker, ed., Images of Science (Chicago: The University of Chicago Press, 1985), p. 49.

2. Ibid., pp. 213-215.

3. Michael J. Moravcsik, How to Grow Science (New York: Universe Books, 1980), p. 26.

4. Tippett & Associates/Architects and Dober & Associates, Inc./Planning Consultants, Emory University Campus Plan - 1982 (Atlanta: Tippett & Associates Printing Office, 1982), p. 2.

5. Ibid., p. 6.

6. Emory University, Emory University School of Medicine, 1986/1987 (Atlanta: Office of Publications of Emory University, 1986), p. 36.

7. Emory University, Emory School of Dentistry, 1984/1985 (Atlanta: Office of Publications of Emory University, 1984), p. 13.

8. Personal Interview with James Larkin, 15 March 1986.

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CREDITS

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